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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/660,824

09/12/2003

John D. Hottovy

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02/18/2005

EXAMINER

TESKIN, FRED M

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ART UNIT

PAPER NUMBER

1713

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/660,824

Applicant(s)

HOTTOVY ET AL

Examiner

Fred M Teskin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,10,11,16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 3,8,9,12-15 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 020904.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Claims 1-20 are currently pending and under examination.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 4-7, 10, 11 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5180558 to Takakarhu, alone or in view of the acknowledged prior art as discussed herein in the Background of the Invention (specification, page 2).

Takakarhu discloses a method for continuously taking a sample from a product flow of a polymerization reactor, such as a conventional loop reactor, the product stream containing solid polymer particles, e.g., from 1-olefins, a diluent and monomers, which exit from a polymerization reactor via a discontinuously opening discharge valve and a product tube into a solid-constituent separation container. (Takakarhu, col. 1, lines 8-15 and 65+; col. 2, lines 57-58.)

Takakarhu differs from claims 1 and 11 only in that "repetitively fully closing and opening the take-off (i.e., discharge) valve at set intervals" (claim 1) or "closing and opening the take-off valve in a repetitive pattern" (claim 11) is not explicitly described.

However, as noted above, Takakarhu teaches removal of the product flow from the reactor via a *discontinuously opening* discharge valve (col. 1, bridging paragraph and col. 2, line 35), thus suggesting repeated opening and closing of that valve during the polymerization. The alternate opening and closing of the valve also is implied in the teaching at column 2, lines 3-8: "[t]he sample is taken from the product tube via a closing valve of on/off type which closes for the period of a pressure wave occurring when a pressure wave from the reactor enters the product flow, i.e., *when the discharge valve opens*, and which closing valve opens after the pressure wave." The pressure wave no longer enters the product flow, of course, once the discharge valve fully closes.

In addition, the teaching that “[t]he valve opens discontinuously for a short period of time, e.g., at intervals of half a minute ...” (col. 3, lines 10-12) clearly suggests a repetitive pattern of closing and opening the valve, as claimed.

Thus, the reference would have suggested to one of ordinary skill in the polymer art, withdrawing the product flow from the loop reactor of Takakarhu in a discontinuous manner by repetitively fully closing and opening the discharge valve at set intervals coordinated with the opening and closing of the closing valve in its product tube, motivated by a reasonable expectation of achieving the desired product sampling objective.

Accordingly, the subject matter of claims 1, 7 and 11 is held to have been *prima facie* obvious at the time of invention within the meaning of Section 103.

The subject matter of claims 4-6, 10 and 18-20 likewise would have been obvious from Takakarhu, alone or taken in view of the acknowledged prior art.

In particular, as to claim 10, it would have been obvious to extend the set intervals of repetitively fully closing and opening the discharge valve of Takakarhu through substantially all of the polymerization step as a quality control measure – i.e., to monitor, via repeated sampling of the product flow, reactor conditions throughout the polymerization and thereby detect possible deviations from target conditions or properties.

As to claims 4-6 and 18-20, these claims specify numerical values for volume of the loop reaction zone, which are not mentioned by Takakarhu. However, as acknowledged herein (parag. [0006]), the flow rate inside a loop reactor can range

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typically from 15,000 gallons to 1,000,000 gallons per minute, which implies a capacity that embraces reaction zone volumes within the claimed ranges. Moreover, it would have been well within the level of ordinary skill to scale-up the loop reactor of Takakarhu to a capacity adequate to produce the desired quantity of polymer product. Indeed, it has been held that the mere scaling up of a prior art process capable of being scaled up would not establish patentability in a claim to an old process so scaled. *In re Rinehart*, 189 USPQ 143, 148 (CCPA 1976). On this record, the prior art method of Takakarhu appears capable of being scaled up in terms of reaction zone volume, and the motivation to do so derives from the practical consideration of being able to produce large quantities of polymer in an efficient manner.

Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakarhu as applied to claims 1 and 11 above, and further in view of US 4257533 to Matsuyama et al.

Claims 2 and 16 call for a ball valve as the take-off valve of the claimed process. Takakarhu teaches the use of a discontinuously opening discharge valve but mentions no specific valve types.

Nevertheless, in discharging a polymer slurry, it is conventional practice in the art, as acknowledged by Matsuyama et al, to use a ball valve inserted into the main body of a polymerization vessel and repeating the complete opening and complete closing of the valve intermittently over a short period of time. (Matsuyama, col. 1, lines 19-20 and 40+.)

While Matsuyama et al attribute the method of operating the valve intermittently to increased fluctuation in the downstream polymer slurry receiving tank, their description nonetheless indicates the utility of a ball valve as a means of withdrawing polymer slurry from a loop reactor. That this method is not used in the invention of Matsuyama et al is not dispositive of unobviousness, since all disclosures of the prior art, including unpreferred embodiments, must be considered. *In re Lamberti*, 192 USPQ 278, 280 (CCPA 1976).

Moreover, given that the Takakarhu method similarly involves removing a pressurized suspension of polymer particles, diluent and monomers from a loop reactor system via a discontinuously opening discharge valve (col. 1, lines 7-9 and 65+), it would have been obvious to one of ordinary skill in the art to modify that method through use of a ball valve as per the conventional practice detailed in Matsuyama et al. One so skilled would have undertaken the modification with a reasonable expectation of success, since Matsuyama et al, as noted above, mention a ball valve as one of the valves capable of repeated complete opening and complete closing intermittently over a short period of time, and the Takakarhu discharge valve is intended to open discontinuously for a short period of time (col. 3, lines 10-11).

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5183866 to Hottovy, with reference to the submission from *The American Heritage Dictionary* (2d ed.), page 923.

Hottovy describes a polymer recovery process which includes the steps of: (i) polymerizing in a loop-type polymerization reactor olefin monomer to produce a slurry of solid polymer and liquid diluent (col. 1, lines 5-9; col. 2, lines 20-44); (ii) withdrawing through a product take-off (PTO) valve located in a settling leg, a charge of the liquid slurry (col. 2, lines 48-49); and (iii) periodically opening the PTO valve to allow an intermittent flow of the slurry into a flash line (col. 2, lines 60-63 and col. 5, lines 50-55).

Steps (i) and (ii) clearly correspond to the first two steps of the process as claimed in claim 11.

As to the third and final step: Hottovy's description of *periodically opening* the PTO valve to allow an *intermittent flow* of the slurry into a flash line is considered essentially synonymous with a repetitive pattern of closing and opening the take-off valve, per claim 11. Indeed, the term "periodic" ordinarily means: "1. Having periods or repeated cycles. 2. Happening or occurring at regular intervals ... intermittent." (*American Heritage Dictionary*, page 923.) Thus, periodic opening of the PTO valve as per Hottovy necessarily and inherently entails periodic closing of the same at regular intervals.

Accordingly, Hottovy's description is considered sufficiently specific that one skilled in the art would reasonably understand or infer from the prior art reference's teaching that every claim limitation was described in that single reference. *Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc.*, 68 USPQ2d 1186, 1190 (Fed. Cir. 2003).

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Claims 3, 8, 9, 12-15, and 17 are objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claim. Examiner has not, as of the date of this Office action, located or identified any prior art documents that can be used to render the process as defined by said claims anticipated or obvious to a person of ordinary skill in the art.

Any inquiry concerning this communication should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMTeskin/02-15-05


FRED TESKIN
PRIMARY EXAMINER
